

## Six Week STEM-Rich Afterschool Making Program

Session	UNIT	Activities	Description	Content Area	Key Facilitation Points	NGSS
1	Introduction	Science Journals	Students sew or fuse plastic bags into colorful covers for their idea notebooks	Introduction to iterative processes of engineering and design.	Notebook as a thinking space and history of ideas	Engineering Practices
2+	Electricity: Investigation and foundational familiarity	Circuit Boards	A collection of wood boards containing individual electrical components (batteries, buzzers, bulbs, motors, etc.) with a large quantity of wires. This offers an open-ended format for simple or complex ideas about circuits to be explored, shared and discussed.	Circuits, energy transfer, logical thinking, experimentation, question development.	Listening to young people's ideas, following lines of inquiry. Scientific language- when and how to bring it in?	3.5 ETS 1-3 Engineering Design 4-PS3-4 Energy
3	Energy and Kinetic Motion	Scribbling Machines	An offset motor powers a vibrating drawing contraption that traces a its path on paper.	Kinetic motion, energy transfer, balance, symmetry, variables, iterations.	Iteration, drafts, noticing & observation The role of artistic pursuits in Tinkering	3-PS2-2 Forces and Interactions
4-5	Deepening skills and investigation	Nature Bots	Using the same off-set motors, students use asymmetrical natural materials for more complex investigations of balance, friction, movement and sculptural representation	Eccentric motion, energy transfer, balance, symmetry, variables, friction, and movement	Local adaptation of activities to reference themes or interests that have come up in previous work.	3.5 ETS 1-3 Engineering Design 4-PS3-4 Energy
6	Culmination	NatureBot Music Videos	Students create music videos with their Bots dancing on a table-top stage. Performative aspect inspires many students to further iterate on Bot's design/movement to match the musical rhythm.	Design, communication Finish building & record music videos	These music videos can be uploaded to a shared platform.	